

factors through regression equations has led to the ability to express as a percentage an applicant's likelihood of success in training.⁵ Four years ago the system was computerised for both the application and the scoring of results, which has opened the way to much further development. New tests, when confirmed and introduced, will give the air force selectors refinements for judging applicants' likelihood of success in training and service. Furthermore, the tests often provide evidence that is valuable in deciding the candidates' suitability for specialties other than those initially considered. All this is particularly important when training methods have to be improved to cope with the rapidly rising demands of technology despite fixed or diminishing budgets.

Several years must elapse before the results of applying selection techniques to surgical trainees will be available. Meanwhile others may wish to follow the example of the Royal College of Surgeons and a few medical schools in attempting to provide more objective and scientific methods

for selecting those who will take medicine into the next century.⁶

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Near death experience

Analogous to other stress induced psychological phenomena

A close brush with death has been known to change a person's view of life.¹ But does it also offer insights into death itself? Although a recent review of the so called near death experience concluded that it does not,² some of those reporting such an experience, who include C G Jung,³ have disagreed, often citing the consistent features of the experience in evidence. On cluster analysis these features divide into three groups: cognitive, including distortion of time and a review of one's life or panoramic memory; affective, usually a feeling of peace or joy; and transcendental, visual images of a heavenly world populated by deities and deceased relatives.⁴ Other common components are feelings of separation from the body, visions of oneself (autoscopy phenomena), and the "tunnel experience" of passing through a dark enclosed space to emerge into brilliant light.⁵

Such mental phenomena have been described by people who believed themselves to be in danger of dying through illness, surgery, or accident. Albert Heim, a Swiss geologist, collected the first series in 1892 from mountaineers who had survived falls.⁶ Most subsequent reports have been based on similar self selected samples, which makes it impossible to estimate how common the near death experience is, though two small studies of consecutive survivors of cardiac arrest found it to be unusual.^{7,8} No predisposition has been shown for age, sex, or religious conviction, but subjects have described more previous "mystical experience" than controls, such as communication with the dead or memories of a past life.⁹

Explanations have included the spiritual,^{10,11} the psychoanalytic,^{12,13} and the purely neurological¹⁴—all sharing only one attribute: each requires a form of faith. And, though the features of the near death experience are reproduced in drug induced states,¹⁵ this points to a physiological substrate rather than to their aetiology. Any comprehensive explanation must account not only for those who are ill and genuinely near death but for those who are healthy though in greater danger (such as Heim's mountaineers) and those who are ill but not in danger. In encompassing these, Roberts and Owen concluded that the near death experience is a complex hallucinatory phenomenon in people who perceive death as imminent.²

Thus the actual threat of death is less important than the perceived threat, as has been described in accident neurosis.¹⁶

It may be through analogy that the near death experience can be explored as each component occurs also in other circumstances. The founder of descriptive psychopathology, Karl Jaspers, likened the affective component to the peaceful inactivity of soldiers under battlefield barrage, representing a stunning of emotional response rather than true calm.¹⁷ Autoscopy hallucinations and depersonalisation are known manifestations of acute anxiety. Like other "dissociative" hallucinations, autoscopy phenomena may contain elements of wish fulfilment¹⁸—in this case meeting loved ones in a pleasant after life whereas depersonalisation combines temporal slowing and out of body experience and might be regarded as an adaptive mental response to overwhelming physical danger.¹⁹ One study of out of body phenomena found that positive emotions and life review were common whether or not there was a mortal threat. In fact no experience was exclusive to the near death experience, though its images were more likely to be linked with death, the immediate source of stress.²⁰

Culture also influences the images of the near death experience, though as with other mental symptoms the nature of the experience seems to be universal.²¹ No crossing of cultural boundaries—for example, meeting a god from another religion—has been described.²

Can any conclusion be drawn from the religious conversion that sometimes follows a near death experience? Probably not, as it is neither unique nor uniform. Conversion may also follow temporal lobe seizures,²² but did not occur in survivors of cardiac arrest, though some were confirmed in their pre-existing beliefs, both religious and atheistic.^{7,8}

Understanding and discussing attitudes to death and premonitions of it may reflect good clinical care of the fearful or dying patient.⁵ But the content of such experience reveals no more about death than delusions of being spied on reveal about surveillance technology. The near death experience seems to be comparable to other mental reactions to perceived threat, coloured by culture and current stress, and commoner in those with similar previous experience. Its importance lies

not in any insight into death but in what it can illustrate about psychological life.

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Studying the gall bladder

Ultrasonography takes over from oral cholecystography

Real time ultrasonography should be the first imaging technique used in all cases of suspected gall bladder disease and will usually be the only investigation necessary. Cholescintigraphy should be used to resolve uncertainty in suspected acute cholecystitis and oral cholecystography reserved for uncertain diagnoses after ultrasonography for suspected chronic cholecystitis.

These are the recommendations of the health and policy committee of the American College of Physicians in a position paper, *How to Study the Gallbladder*,¹ which is based on a comprehensive review of all imaging tests on the gall bladder.² The accuracy rates, physical limitations, availability, and relative costs of the various imaging methods are given for acute and chronic cholecystitis with the intention of establishing clear diagnostic guidelines for assessing gall bladder disease.

In suspected acute cholecystitis ultrasound has an unsurpassed ability to identify lesions of the gall bladder, can be performed rapidly at low cost, and can show other causes for the patient's pain. Confirming obstruction of the cystic duct by cholescintigraphy with a technetium-99m labelled derivative of iminodiacetic acid is useful as a second test, either when ultrasonography has failed to show stones or when the origin of the symptoms remains in doubt in the presence of stones. Rarely, ultrasonically guided percutaneous aspiration of the gall bladder may be used to diagnose acute acalculous cholecystitis.^{3,4}

In patients with recurrent right upper quadrant pain chronic gall bladder disease should be considered, and ultrasonography will almost always solve the diagnostic problem. Oral cholecystography may be used when an adequate ultrasound study cannot be performed for technical reasons, such as obesity. Endoscopic retrograde cholangiography may be needed occasionally to evaluate persisting and convincing symptoms when ultrasonography and oral cholecystography give negative results.

The relegation of oral cholecystography to a secondary role and the total abandonment of intravenous cholangiography show how the development of new methods of diagnostic imaging has changed radiology.^{5,6} The changes, however, have not happened without resistance. Proponents of oral cholecystography remain reluctant to see it demoted after more than 60 years of sterling service. The ability of oral cholecystography to diagnose adenomyomatosis has been

cited,⁷ but this condition is shown well by ultrasonography.^{8,9} Similarly, patency of the cystic duct before the dissolution of stones can be assessed by ultrasonography.¹⁰ The most valid and often quoted criticism of ultrasonography, however, that it depends on skilled operators, still holds.

The main factors in the emergence of the predominant role of ultrasound are improvements in training and equipment. In the United Kingdom the Royal College of Radiologists departed from precedent in 1984 by specifying the minimum number of hours of supervised practical training in ultrasonography that would be expected of all candidates for the final fellowship examination. This means that most hospitals now have radiologists who have been adequately trained in ultrasonography. Furthermore, the College of Radiographers has maintained the high standards of theoretical knowledge and practical training required for its diploma in medical ultrasonography, so that there are now many radiographers who, under the supervision of radiologists, provide abdominal ultrasonography services.¹¹

Advances in technology have led to improvements in both real time ultrasound scanners and image recording devices so that scanning the gall bladder has become quicker and more accurate, and high quality equipment is widely available at low cost. A note of caution, however, must be sounded, for the very cheapness of some equipment has tempted doctors with access to "soft money" into buying their own machines. Such use of inappropriate equipment by inadequately trained staff will inevitably jeopardise the reputation of the technique. A thorough knowledge of the physics of ultrasound and its associated artefacts as well as training in all aspects of cross sectional imaging are vital to the maintenance of standards.¹²

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